

USAWC STRATEGY RESEARCH PROJECT

**THE JOINT EXPEDITIONARY FORCE STRIKE SUSTAINMENT VESSEL AND
JOINT UNMANNED AERIAL SUPPORT CRAFT CONCEPTS:
TRANSFORMING TO FIGHT SWIFTLY AND DECISIVELY FROM THE SEA AND
BEYOND**

by

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ABSTRACT

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Global logistical challenges during Operation Desert Storm/Shield and Operation Iraqi Freedom highlighted the volatile, uncertain, complex, and ambiguous (VUCA) threats the United States, its allies, and coalition partners will face in the 21st century. Today, U.S. military forward presence relies heavily on foreign access, infrastructure, and host nation support to generate large stockpiles of supplies to sustain joint force operations. To mitigate the fore mentioned logistical risks, i.e. foreign access, infrastructure, and host nation support, and to further enhance joint force interoperability, the U.S. Secretary of Defense (SecDef) has directed that Department of Defense (DOD) spending be aimed at making the best use of resources through the development of joint systems and capabilities.¹

Moving forward with direction from SecDef, the design, development, and procurement of a joint sea-basing platform recognizes the advantage of a truly integrated and stable transformation investment in science and technology (S&T). Contrary to today's single service sea-basing platform designs, concepts, and strategies, one can posit that an all-inclusive S&T joint sea-basing developmental program, with enablers will offer the Combatant Commander and Joint Force Commander additional tools and options to close, assemble, employ, and sustain joint forces supporting functional, crisis action, and/or deliberate contingency operations.

THE JOINT EXPEDITIONARY FORCE STRIKE SUSTAINMENT VESSEL AND JOINT UNMANNED AERIAL SUPPORT CRAFT CONCEPTS: TRANSFORMING TO FIGHT SWIFTLY AND DECISIVELY FROM THE SEA AND BEYOND

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Moving forward with direction from SecDef, the design, development, and procurement of a joint sea-basing platform recognizes the advantage of a truly integrated and stable transformation investment in science and technology (S&T). Contrary to today's single service sea-basing platform designs, concepts, and strategies, one can posit that an all-inclusive S&T joint sea-basing developmental program offers the Combatant Commander and Joint Force Commander additional tools and options to close, assemble, employ, and sustain joint forces supporting functional, crisis action, and/or deliberate contingency operations. Through aggregating limited military resources to focus on developing joint sea basing platforms and enablers, DOD can fully exploit maritime opportunities to best realize the advantages of the joint operations concepts.

The Joint Operating Concepts (JOpsC) are means for defining a passage to the development of future strategic systems, technologies, and procedures to provide set guidelines and for describing how the joint force intends to operate during the next 15 to 20 years. JOpsC recognizes that joint sea-basing platforms must be capable of rapidly deploying and employing joint forces and provide sustained logistics across the inter-intra theater warfighting spectrum.³

To swiftly and decisively defeat tomorrow's VUCA threats and challenges, America will need to invest additional intellectual capital, make use of innovative ideas, and judiciously allocate constrained congressional resources to acquire relevant joint sea-basing platforms. The requirements for the U.S. to remain relevant and to maintain global freedom of action from the sea is a consistent theme throughout the U.S. National Security Strategy (NSS), National Defense Strategy (NDS), and National Military Strategy (NMS). When viewed holistically, these strategies convey unequivocal direction for development and implementation of joint operations concepts. This project offers two innovative and enabling joint platform illustrations, the Joint Expeditionary Force Strike Sustainment Vessel Concept (JEFSSV) and the Joint Logistics Unmanned Aerial Support Craft Concept (JLUASC), with notional system attributes and employment information to best support national security goals and objectives. Additionally, this document will compare and contrast JEFSSV and JLUASC concepts to a current afloat pre-positioning platform and an unmanned aerial vehicle to facilitate shaping of tomorrow's threat environment, deter global and regional conflict and when directed, to swiftly and decisively prosecute war to defeat an adversary.

National Security Strategy

The National Security Strategy communicates that American forward presence overseas is one of the most profound symbols of the U.S. commitment to allies and friends. Moreover, it recognizes that through a willingness to use force in self-defense and in defense of others, the U.S. demonstrates its resolve to maintain a balance of power that favors freedom. Contending with uncertainty and attempting to meet enumerable security challenges, the U.S. will require bases and stations within and beyond Western Europe and Northeast Asia, as well as temporary access arrangements for the long-distance deployment of U.S. forces.⁴ This unparalleled strength of the armed forces, and their forward presence, have maintained peace in some of the world's most strategically vital regions. Unlike the Cold War-era, threats are less certain and have evolved to challenge America's global resolve. Consequently, our 21st century military structure must be transformed to focus on how an adversary might fight rather than where and when a war might occur. Innovation and experimentation within our armed forces rest solely on new approaches to warfare, strengthening joint operations, and taking full advantage of science and technology by developing multifaceted platforms. These efforts will enable our joint forces to fight and win decisively.⁵

Terrorist attacked a symbol of America prosperity. They did not touch its source. America is successful because of the hard work, creativity, and enterprise of our people.⁶

National Defense Strategy

Presently, the Department of Defense implements the President's commitment to forward defense of freedom expressed in the National Security Strategy. The Secretary of Defense has outlined a comprehensive strategic approach to confront the challenges the nation will likely encounter in the 21st century. In general, the intent is to create favorable security conditions around the world by re-examining how the nation thinks about security, formulates strategy and adapts our forces to achieve success. To strengthen the nation's capability for prompt global action and flexibility to employ military forces where needed, the DOD requires the capacity to move swiftly into and through strategic pivot points and remote locations. The new global posture - using main operating bases (MOB), forward operating sites (FOS), and a diverse array of more austere cooperative security locations (CSL) - will support such needs. However, to ensure success, pre-positioned afloat equipment and stocks overseas must be better configured strategically and operationally linked and positioned for global integration and employment.⁷

Emerging joint sea basing concepts and new joint equipment designs hold promise for the broader transformation of our overseas military posture. To that end, the DOD must review and redesign inter-intra theater supply chain management systems, processes, programs, and pre-positioned equipment platforms to effectively plan, organize, distribute, and monitor our "just in time" force and capability flow to accomplish national goals and objectives. Single-service afloat pre-positioning platforms, tailored to support particular equipment and supply needs, are not jointly designed to support real-time joint operations force integration. In keeping with the NSS and NDS, futuristic sea-basing platforms must be born joint and evolve to add flexibility, agility and real-time responsiveness to the Joint Force Commander's concept of operations.⁸

National Military Strategy

History and experience, i.e., Desert Storm/Shield and Operation Iraqi Freedom, have proven that U.S. military power projection is essential in creating the most favorable conditions for the attainment of national objectives. As previously mentioned, in the future the U.S. may not be able to rely on foreign access, infrastructure, and host nation support to generate large stockpiles of supplies in order to sustain joint force operations. Lieutenant General Pagonis, U.S. Army, noted during the first 30 days of Desert Shield, joint logistics efforts landed and processed over 38,000 troops and 163,581 tons of equipment, which equates to an average processing of 35 planes and 2.1 ships per day. Additionally, over the course of the operation, logisticians' off-loaded 12, 435 - track combat vehicles, 117,157 - wheeled vehicles and 33,100 -

containers. In terms of vehicles, this roughly equates to the total number of trucks and buses registered in state of Alaska.⁹

Unlike our history and experiences, new millennium military forces and equipment must not be constrained by permissive pier-side logistical build-up efforts. However, to ensure success, forward presence via over the horizon sea-basing operations must be capable of launching and sustaining rapid, lethal, and relevant joint forces. These sea-basing efforts include supporting Marine Corps distributed operations, the introduction of modular brigade combat teams and special operations force insertions. Once forces are safely transported ashore, the sea-basing platform will link the inter-intra theater supply chain to sustain expeditionary maneuver warfare.¹⁰

In the future, joint combat operations success will require uninterrupted joint, interagency and multinational collaboration and integration across the warfighting spectrum. Transformation requires a common and cooperative vision, a combination of technology, intellect and cultural adjustments – adjustments that reward innovation and creativity. The introduction of the Joint Expeditionary Strike Sustainment Vessel and the Joint Unmanned Aerial Support Craft will provide unique capabilities to ensure U.S. forces emerge from the sea to support natural disasters, counter terrorist threats, and to deter and/or defeat future global challenges. By employing and managing focused logistics efforts through JEFSSV and JLUAS, the DOD can ensure that resources and sustainment are routinely delivered to the right personnel, in the right quantities at the right time.¹¹

Joint Operations Concepts

Following the 2001 Quadrennial Defense Review, Secretary of Defense Donald Rumsfeld introduced the Joint Operations Concepts (JOpsC). These concepts describe how the future joint force will operate in a complex environment within the next 15 to 20 years. Importantly, it described the coordinated development of service, combatant command, and combat support defense agency capabilities. These concepts are based on a clear understanding of the strategic setting, strategic guidance, and a capabilities-based approach to joint warfare and crisis resolution. Moreover, JOpsC is the unifying framework for developing subordinate joint operating concepts, joint functional concepts, enabling concepts, and integrating concepts. In the future, the joint force will have attributes to make it fully integrated, expeditionary in nature, networked, decentralized, adaptable, able to achieve decision superiority, and lethal.¹²

Our military culture must reward new thinking, innovation, and experimentation. Congress must give defense leaders the freedom to innovate, instead of micromanaging the Defense Department. And every service and every

constituency of our military must be willing to sacrifice some of their own pet projects. Our war on terror cannot be used to justify obsolete bases, obsolete programs, or obsolete weapon systems. Every dollar of defense spending must meet a single test: It must help us build the decisive power we will need to win the wars of the future.¹³

Joint Integrating Concept “Sea-Basing”

Sea-basing is one of several evolving Joint Integrating Concepts (JIC) that describes, “...how a Joint Force Commander (JFC) 10 to 20 years in the future will integrate capabilities to generate effects and achieve an objective.” Sea-basing is defined as the rapid deployment, assembly, command, projection, reconstitution, and re-employment of joint combat power from the sea, while providing continuous support, sustainment, and force protection to select expeditionary joint forces without reliance on land bases within the Joint Operations Area (JOA). The JIC document describes how sea-basing/afloat platforms will complement, integrate, and enable joint military capabilities throughout the littorals with minimum or no access to nearby land bases.¹⁴ These capabilities expand operational maneuver options, and facilitate assured access and entry from the sea. 21st century joint sea-basing will be the nation’s asymmetric military advantage, contributing immeasurably to global peace, international stability, and war-fighting effectiveness. It is the key to operational independence in the dangerous decades that lie before us. It is essential for “out of the box” thinkers to step forward with innovative and creative ideas to help transform the military.

U.S. forces must react promptly to theater needs from a posture that minimizes footprint. DOD is changing U.S. global basing policy, placing more emphasis on the ability to surge quickly to trouble spots across the globe, and making U.S. forces more agile and expeditionary. The new challenge is to project joint power more rapidly to confront unexpected threats.¹⁵

Analysis And Alternatives

In considering an innovative and rational alternative to best support DOD transformation efforts, this paper examines the afloat pre-positioning ship/sea basing platform. This concept will briefly examine an afloat pre-positioning force ship, in terms of strategic and operational illustrations and designs, and its general employment attributes as they relate to future joint force operations. Additionally, this document will consider a general-purpose option for the unmanned aerial vehicle (UAV). Similarly, the UAV will be examined in terms of strategic and operational illustrations and designs, and its general employment attribute as they relate to future joint force operations. Theoretically, the Joint Expeditionary Force Strike Sustainment Vessel and the Joint Logistics Unmanned Aerial Support Craft offer promising designs to

support future national security strategies and joint operations concepts. The two concepts, when compared and contrasted to their predecessors, the afloat pre-positioning ship and the unmanned aerial vehicle, will take the DOD beyond the 2015 joint vision and rightly provide the U.S. with born joint capabilities that will swiftly support and decisively sustain future battles, campaigns, and wars.

History of the Afloat Pre-positioning Force

Presently, the U.S. maintains three afloat pre-positioning force (APF) programs : the Marine Corps' Maritime Pre-positioning Force (MPF), Combat Pre-positioning Ships (CPS), and the Logistics Pre-positioning Ships (LPS) supporting four different services. The Military Sealift Command's Afloat Pre-positioning Force (APF) concept was established in the 1980s and currently consists of 39 ships, which are located in the Mediterranean Sea, Indian Ocean, and Pacific Ocean supporting MPF, CPS, and the LPS, respectively. The MPF supports the Marine Corps, the CPS supports the Army, and the LPS support the Navy, Air Force, and Defense Logistics Agency. The APF's primary function is to facilitate compressed deployment and employment time lines through the afloat pre-positioning of equipment in support of brigade size forces (e.g., approximately seven to fourteen thousand personnel). Collectively, these afloat pre-positioning programs provide military resources and reduce demand on air and sealift requirements while minimizing force staging, assembly, and force closure time.

All APF ships are either commercially owned or leased by the Department of Defense and provide equipment roll-on roll-off (RO/RO) access, have container carrying capability, and organic cranes.¹⁶ Assuming contingency plans and intelligence reports confirm that U.S. forces have air, land, and sea superiority, then the present day APF construct is more than capable of sustaining contemporary joint operation strategies. To the contrary, if the DOD continues to transform itself and move forward with the implementation of joint operations and joint integration concepts, then the U.S. has created a tremendous gap in its ability to sustain future joint force operations.

For example, during Operation Iraqi Freedom (OIF), U.S. Central Command was afforded the opportunity of building infrastructure, i.e., logistics, training, and other military support to introduce forces into theater, whereby combat operations were initiated from Kuwait, a permissive environment. Overwhelmingly, the U.S. employed voluminous sealift assets, over 199 vessels at sea ports of debarkation and handled over 880,000 short tons of goods and materials. This effort is equivalent to five round trips travels of 39 afloat pre-positioning ships from the U.S. to Kuwait, which is not an easy task. Assuming our enemies are also gaining

intellectual knowledge and lessons learned from previous experiences, one could assume future enemy strategies will include the targeting of potential U.S. seaports prior to joint force build-up.¹⁷ In the future, our afloat pre-positioning ships must be more than linked to the inter-intra theater supply chain; they must be fast, flexible, agile, multifaceted, and expeditiously capable of transporting and sustaining any military service lift requirements, under all weather conditions.

As the United States prepares to meet the myriad of 21st century challenges, strategist must understand what military tools are at their disposal can and cannot do. Every war is different; no war is like the last one. Consequently, military planners cannot draw upon the same types of historical analysis, as would medical and legal professionals. Military planners must routinely adapt to the particulars of each new conflict, and incorporate historical lessons about how capabilities have been employed to guide their developing military strategy.¹⁸

Joint Expeditionary Force Strike Sustainment Vessel

During a 2003 visit to Okinawa, Japan, General Hagee, Commandant of the United States Marine Corps, challenged the Marine and Navy Team to think “out of the box” to develop and support the future of Expeditionary and Maritime Pre-positioning Force concepts and programs. His challenge inspired the development of the Joint Expeditionary Force Strike Sustainment Vessel (JEFSSV), with its complimentary Joint Expeditionary High Speed Striker Craft (JEHSSC). Although not revolutionary, the design considers lessons learned from Operation Desert Storm/Shield and OIF to offer an evolutionary advancement for the afloat pre-positioning program.¹⁹ The JEFSSV’s design holistically considers the 21st century threat environment, which includes but is not limited to: mission, enemy, terrain, weather, troops and support available, time available, and civil considerations (METT-TC).²⁰ In theory, it offers a relevant multi-purpose joint platform with attributes such as speed, flexibility, agility, and all weather tools capable of facilitating joint, interagency, and multi-national unity of action and effort from the sea.

To gain an appreciation for the JEFSSV, the following is an examination and comparison to an existing Marine Corps Maritime Pre-positioning Ship/Force (MPS/F) design and concept of employment. MPS/Fs are privately owned and operated by three different companies : Maersk Line, Waterman Steamship Corporation, and American Overseas Marine Corporation and Military Sealift Command chartered. They possess the ability to conduct roll-on, roll-off (RO/RO) and lift on, lift off (LO/LO) operations, self sufficient offload operations from either in-stream of port facility, transport bulk liquids while off shore and maintain temperature controlled

spaces to protect equipment. In a permissive environment and when positioned three to five miles from the littoral, a MPF squadron consisting of five ships is capable of supporting and sustaining a force of approximately 17,000 Marines for 30 days.²¹

Unlike traditional MPS/F; the JEFSSV is born joint, which means during the ship's design, engineers and builders start from the top and are specifically steered by the authoritative direction of the national security, defense, and military strategy requirements. Deployed and employed under the Navy-Marine Corps visions of ship to objective maneuver and operational maneuver from the sea concepts, JEFSSV -- i.e., the mother ship with its self-contained JEHSSC -- i.e., the internal child will be multifaceted, durable, and have a ship to shore range exceeding 200-300 nautical miles. Its unique attributes include but are not limited to the following: contains two internally transported JEHSSCs -- i.e., two over the horizon joint high-speed vessel (HSV) with forward and aft openings to load and transport personnel, cargo, and equipment; has a discharge and recovery system via float-on/float-off (FO/FO) launching and it also possesses an internal discharge and recovery crane system for emergencies. (Figures 1 and 2) Again, unlike its MPF predecessor, JEFSSV, if challenged by arduous sea states or enemy threats, can quickly transition to calmer waters to facilitate JEHSSC discharge and recovery operations.

Throughout the execution of joint force operations, JEFSSV and JEHSSC also operate in concert with inter-theater supply chain efforts via main operating bases and high-speed vessel connectors to replenish the sea-base. Following joint force littoral penetration and subsequent operations ashore, JEFSSV, like traditional MPS/F, has the ability to dock itself in order to conduct roll-on, roll-off (RO/RO) and lift on, lift off (LO/LO) operations. Additionally, the design includes an all weather flight deck, with composite air, capable of providing self-protection, and air support for joint forces operating ashore. Moreover, JEFSSV virtually eliminates all external LO/LO crane requirements, leaving additional space for adding troops berthing, equipment stowage, and ship defense systems. This design embraces current and emerging afloat pre-positioning concepts and goes beyond the adherence of Joint Operations Concepts to support the realization of U.S. Department of Defense transformation efforts.

JEFSSV will limit and/or eliminate American dependency on allied and coalition geographical land space; thereby enhancing the deployability, employability, and the stand off capabilities of carrier, expeditionary, and surface strike groups. By considering JEFSSV, with accompanying JEHSSC as part of our expeditionary future, the DOD will move quantum leaps ahead in its ability to command and control from the sea and provide real-time, reliable, efficient, and uninterrupted sustainment via the inter-intra theater supply chain. Under the department of

defenses direction, JEFSSV meets the vision and aim that supports the development of enhanced agility, operational reach, tactical flexibility, responsiveness, and warfighting effectiveness to meet the myriad of geographical responsibilities and mission requirements levied on Joint Force Commander (s).

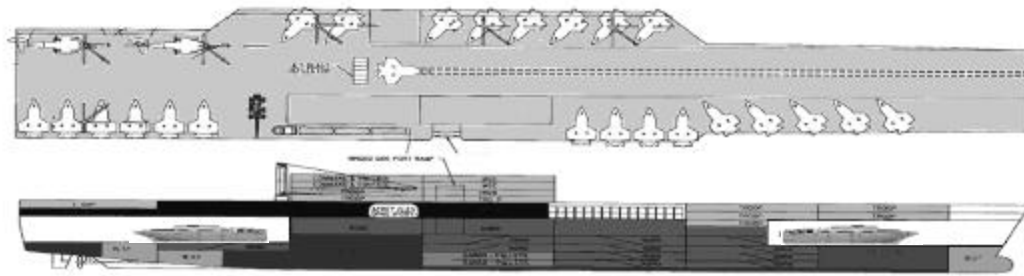


FIGURE 1. JOINT EXPEDITIONARY FORCE STRIKE SUSTAINMENT VESSEL (JEFSSV)

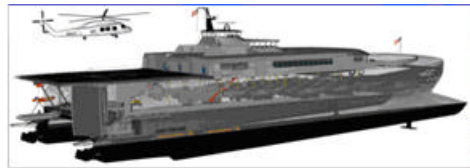


FIGURE 2. JOINT EXPEDITIONARY HIGH SPEED STRIKER CRAFT (JEHSSC)

Joint Logistics Unmanned Aerial Support Craft Concept (JLUASC)

The unmanned aerial vehicle (UAV) is designed to satisfy differing and unique commanders' requirements across the spectrum of warfighting. As a result, unmanned aerial vehicles continue to evolve, as U.S. military defense requirements demand a next generation of airborne reconnaissance vehicles. Technological advances in aeronautics, electronics, materials, data processing, and jet propulsion are converging to produce a very capable family of UAV systems that have enabled the collection and near-real time dissemination of information, while minimizing risk to soldiers, sailors, airmen, and Marines. To gain an appreciation for what JLUASC can offer the next generation of airborne reconnaissance development, it will be examined and compared to a combat-tested UAV known as the Global Hawk. (Figure 3)



FIGURE 3. GLOBAL HAWK (GH)

During Operation Iraqi Freedom, Global Hawk flew five percent of the Air Force's high altitude reconnaissance sorties, but accounted for more than 55 percent of the time sensitive-targeting imagery generated to support strike missions. According to U.S. Joint Forces Command, Global Hawk proved its military worth by providing critical intelligence, surveillance, and reconnaissance capabilities to the warfighting community. Global Hawk's "A" model has a wingspan of 116 feet (35.4 meters) and is 44 feet long (13.5 meters). It can range as far as 12,000 nautical miles (22,236 kilometers) at altitudes up to 65,000 feet (19.8 km), flying at speeds approaching 340 knots (about 400 mph) for as long as 35 hours. During a typical mission, the aircraft can fly 1,200 miles to an area of interest and remain on station for 24 hours. The system carries an integrated sensor suite consisting of an electro-optical and infrared sensor and a synthetic aperture radar/ground moving target indicator. The cloud-penetrating, day or night sensor package can image an area the size of the U.S. state of Illinois (40,000 nautical square miles) in just 24 hours. Through satellite and ground systems, the imagery can be relayed in near real time to battlefield commanders.²²



FIGURE 4. JOINT LOGISTICS UNMANNED AERIAL SUPPORT CRAFT (JLUASC)

Unlike the Global Hawk, the JLUASC concept describes an expeditionary operational /tactical means to not only conduct reconnaissance and surveillance, but to also act as a capability to support and sustain combat forces during any war phase. Consequently, JLUASC is a joint force capability that can be launched from practically any land, and/or sea-based platform. More specifically, the joint unmanned aerial support craft provides the Joint Force Commander (JFC) and his Component Commanders with a real-time force multiplier capable of concurrently conducting multifaceted missions in support of maritime, land, or air operations.

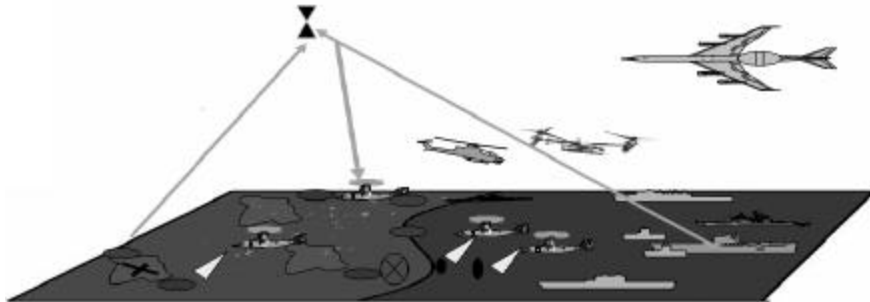
Similar to Global Hawk; JLUASC possesses electro-optical and infrared sensor and a synthetic aperture radar/ground moving target indicator that can transmit real-time target information to the any commander. Surprisingly, JLAUSC possesses unique attributes that set it apart from the Global Hawk and/or traditional UAVs. These attributes include but are not limited to, a vertical take – off – lift (VTOL) unmanned aerial vehicle airframe, a mine detection capability, an onboard laser targeting systems, and an internal 3,000 pound capacity bay lift and release cargo delivery system. Like JEFSSV, the joint logistics unmanned aerial support craft is born joint and is a backbone enabler designed to facilitate the realization of joint operations and integrating concepts.

- Conceptual Description: JLAUSC design is based on the MV-22 Osprey tilt-rotor configuration. (Figure 4) The Osprey is a tilt-rotor aircraft designed to transition its propellers from a horizontal to a vertical position in order to achieve helicopter-like take-offs and landings. Like the VTOL UAV, JLUASC uses a multi-grade fuel, has a wingspan of 120 feet and is 47 feet long. It can range as far as 3,500 nautical miles at altitudes up to 25,000 feet, flying at speeds approaching 250 knots for as long as 15 hours. However, unlike traditional UAV systems, JLUASC has an under body split-bay fuselage capable of internally delivering a 3,000-pound payload. Once airborne, JLUASC activates its electronic counter measure (ECM) system in order to protect against enemy air or surface to air threats. Additionally, it possesses the ability to automatically or manually identify and engage multiple ground and/or air threats using its 30 mm laser launching system.
- Conceptual Capabilities: The JLAUSC, like existing UAV, will conduct a myriad of surveillance and reconnaissance missions. (Figure 4) However, once modified, the JLUASC's primary mission reflects a unique ability to transport or retrieve logistics support, perpetually sustain forces, and evacuate combat casualties from any hostile

environment. Because of its unique mission requirements, the JLAUSC will contain the following systems:

- An onboard electronic counter measure (ECM), electronic counter-counter measure (ECCM) and radar chaff system to enhance tactical evasion of most surface- to- air missile threats.
- An all-weather craft with JLUASC has a range of 3,500-plus nautical miles at speeds exceeding 250 knots, depending on the makeup of onboard systems and cargo delivery.
- A two-way digital communication (Global Positioning System) control system linking sea-based platforms to ground combat units (i.e., a man-packed take control system of systems).
- An under body, split-bay, fuselage containing a retractable storage compartment capable of lifting and transporting various types of payloads.
- GPS-assisted positive network connection capable of monitoring the take-off, lift, landing, drop-off and retrieval of the designated payload (to include most classes of supplies and the emergency evacuation of personnel not to exceed 3,000 lbs.).
- To enhance survivability and for protection, JLUASC possesses a 20mm laser launching system capable of automatically or manually identify and engage multiple ground targets, air threats and/or sub-surface littoral mines fields.

Joint Operating Area (JOA)



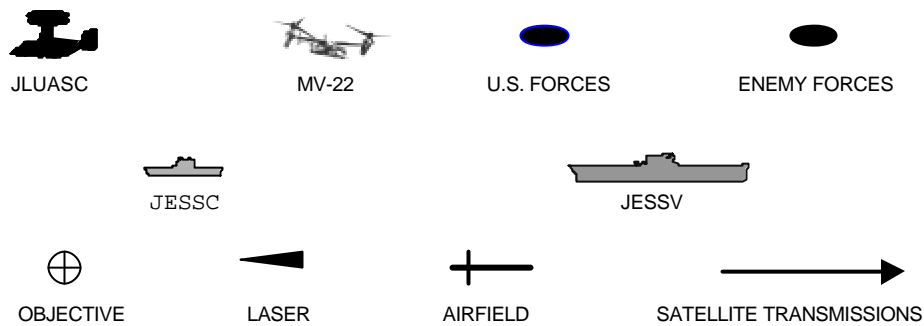


FIGURE 6. BATTLEFIELD SYMBOLLOGY

Employment Concepts of JEFSSV and JLUASC

It is interesting to note in a testimony to Congress on UAVs, Lieutenant General Paul Van Riper, United States Marine Corps, stated, "Our requirements describe a UAV that will improve the situational awareness and information superiority of our force at the tactical and operational levels."²³ Given a rudimentary understanding of the JLUASC system and capabilities (Figures 5 and 6) provides an example of the conceptual employment of JEFSSV and JLUASC using supportability and survivability as cornerstones for sustaining joint forces. Figure 5 also illustrates the operational employment of JEFSSV and JLUASC in support of the joint force commander's concept of operations. Employment of these conceptual capabilities revolves around the commander's ability to synchronize and synergize assigned forces, thus enhancing operational tempo, flexibility, and a combined arms effect to overwhelm the opponent.

A notional example of concepts employment for JEFSSV and JLUASC are as follows: On 26 July 2006, a brigade-sized force from the country of Hamden attacked and seized the capital of Taiwana and the American Embassy. Later that morning, during a routine intelligence briefing, it was reported the airfield had been captured and several beaches along the Taiwana coastline were mined. In an effort to deter further aggression and remove Hamden forces from Taiwana, the President of the United States authorized the Commander U.S. Pacific Command (U.S. PACOM) to assume operational control (OPCON) of a Naval Fleet operating within the Joint Operations Area (JOA). In turn, Commander U.S. PACOM designated the Naval Fleet Commander to act as Commander Joint Task Force -Taiwana (Cdr, JTF-T), who in turn stood up the JTF-T. Within hours of the designation, Commander U.S. PACOM assigned the following mission to JTF- Taiwana:

NLT 29 JULY 20XX CONDUCT NON COMBATANT EVACUATION OPERATION (NEO) VIC TAIWANA. SECURE CAPITAL IOT EVACUATE EMBASSY PERSONNEL. BPT INITIATE OFFENSIVE OPERATIONS IN THE VIC OF TAIPEI IOT SECURE PORTS AND AIR FIELDS FOR FOLLOW ON FORCES TO REMOVE HAMDEN FORCES FROM TAIWANA.

It is now D-day, the Commander Joint Task Force - Taiwan and his Joint Force Maritime Component Commander (JFMCC) have moved through the military decision-making process and decided to implement course of action -three (COA -3). COA -3 requires a simultaneous assault against four Joint Task Force objectives (JTFO): secure designated port and an airfield for follow on JTF forces, conduct non-combat evacuation of the U.S. Embassy and initiate offensive operations to remove Hamden forces from Taiwan. However, COA-3 has several equipment shortfalls: (1) a limited ability to clear mine fields, (2) an inability to lift and transport cargo to support and sustain forces ashore, and (3) limited reconnaissance and surveillance assets. In an effort to remedy equipment shortfalls, JFMCC recommends the repositioning JEFSSV to best support shaping and decisive operations. Additionally, he requests JLUASC to gain battlefield intelligence, destroy shallow water littoral mines, and to replenish forces once ashore. As a result, four JLUASC systems are assigned as direct support assets to JMCC and will be launched/recovered by the Joint Expeditionary Force Strike Sustainment Vessel.

During the shaping phase, JLUASC #1, #2, #3, and #4 will conduct a multitude of deep strike reconnaissance missions over and around the JTFO and the landing force objectives, prior to the employment of maritime forces. Once launched, the JLUASC will evade and engage enemy surface-to-air threats using its electronic counter measures (ECM) and laser weapons. Once sufficient intelligence is gathered, JLUASC #3 and #4 will be diverted to support a JEHSSC mine clearing and breaching operation using their laser launching systems to detect and destroy enemy mines along the coast of Taiwan. After the JTO has been thoroughly shaped, the JTF commander will commence amphibious operations.

During the decisive operations phase, both the JEFSSV and JLUASC platforms will be tasked to support the amphibious assault and subsequent operations ashore. During the assault, JLUASC #1 and #2 will conduct reconnaissance operations along the coastline and convey real-time reconnaissance images to on-board video monitors located on the JEFSSV. Once maritime forces transition ashore, JLUASC #1 and #2 will conduct logistics and medical evacuation missions in support of forces attacking JTOs. Concurrently, JLUASC #3 and #4 will be operating along side the airborne MV-22 i.e., a Marine tilt rotor aircraft, conducting logistics and medical evacuation operations for forces assaulting the joint operations area objectives (JOA). Throughout the assault phase, JLUASC will provide around the clock logistics support

and sustainment, i.e., water, fuel, ammunition, and medical evacuation operations to forces located in and around the JOA. JEFSSV and JLUASC efforts will free-up a large quantity of naval and air assets until airfields and ports can be secured ashore.

Conclusion

Sea-basing and unmanned aerial vehicle concepts, designs, and operations are not new. During operations Desert Storm and Iraqi Freedom both capabilities were operationally and tactically integrated, synchronized, and employed to support the decisive defeat of Saddam Hussein and his tyrannical military forces. What is new, however is the degree to which the contemporary political-military threat environment has evolved and continues to be revolutionized by current and emerging information and technology.

Without a near peer competitor in the foreseeable future, the U.S. is wisely transforming defense capabilities into smaller, more rapidly deployable and employable joint force modules to swiftly and decisively engage either conventional and/or asymmetric threats. The joint operations concepts, which new threats and transformation efforts have spawned, expand the roles of special operations forces and the employment of smaller, joint forces operations teams (JFOT) capable of operating in non-contiguous environments.

In making the future a reality, U.S. dominance across the spectrum of military conflict will depend heavily on new advances in research and technology that facilitate the development and procurement of multifaceted and jointly integrated systems. So, what makes Joint Expeditionary Force Strike Sustainment Vessel and Joint Logistics Unmanned Aerial Support Craft (JEFSSV and JLUASC) different from traditional afloat pre-positioning ship and unmanned aerial vehicle? These evolutionary changes give way to multifaceted joint operations outlined in the joint operations concepts. The joint/versatile design of JEFSSV adds a new dimension to sea-basing operations – its onboard striker crafts limits crane requirements, reduces sea state constraints, enhances at-sea joint force reconstitution and force re-generation, and can maneuver to shallower drafts to conduct in-stream or pier-side logistics throughput operations.

Similarly, yet more far-reaching than Global Hawk, JLUASC facilitates the demands of joint operations concepts by expanding its role beyond the constraints of intelligence, surveillance, and reconnaissance (ISR) gathering missions. JLUASC can over-reach non-permissive littoral regions and contribute positively to the non-contiguous special operations forces and JFOT area of operations. Unlike the traditional unmanned aerial vehicle, JLUASC's VTOL enhancement system, which includes an onboard laser, a sustainment payload delivery

package and a dual medical evacuation system, can simultaneously support air, land, and sea requirements.

These futuristic systems will collectively act as sea-basing enablers and/or couplers to enhance strategic, operational and tactical level warfighting, thereby providing uninterrupted and sustained expeditionary support to the joint warfighters. The JEFSSV and JLUASC are not meant to replace existing afloat pre-positioning force and unmanned aerial vehicles systems/operations; yet these concepts are meant to generate thought provoking dialogue, regarding the development of new and/or the evolution of existing sea and air platforms. More importantly, these unique and innovative concepts and capabilities will provide the 21st century Joint Force Commander with relevant and effective multipurpose systems to shape the threat environment, deter conflict and, when directed, to swiftly and decisively prosecute war to defeat an adversary. The concepts expressed throughout this document will act as enablers/force multipliers to protect and defend America throughout the 21st century.

Endnotes

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